

# AWS Cloud Practitioner

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# Cheat Sheet:

<https://digitalcloud.training/certification-training/aws-certified-cloud-practitioner/>  
<https://rishabkumar7.github.io/CloudNotes/CPD.html>  
<https://aws.amazon.com/it/training/digital/aws-cloud-practitioner-essentials/>  
<https://www.aws.training/Details/eLearning?id=60697>

## Introduction

### Benefits

- Trade upfront expense for variable expense
- Stop spending money to run and maintain data centers
- Stop guessing capacity
- Benefit from massive economies of scale (più prendi meno spendi)
- Increase speed and agility
- Go global in minutes

### Cloud Platform Models

- Infrastructure as a Service
- Platform as a Service (Elastic Beanstalk and Elastic Container Service (ECS))
- Software as a Service

	On-Premises Deployments	IaaS	PaaS	SaaS
Your Responsibility	Application Code	Application Code	Application Code	Application Code
	Security	Security	Security	Security
	Database	Database	Database	Database
	OS	OS	OS	OS
	Virtualization	Virtualization	Virtualization	Virtualization
	Networking	Networking	Networking	Networking
	Storage Hardware	Storage Hardware	Storage Hardware	Storage Hardware
	Server Hardware	Server Hardware	Server Hardware	Server Hardware
Cloud Platform Responsibility				



- Serverless Workloads

## Compute in the cloud

### EC2

This idea of sharing underlying hardware is called multitenancy.

#### Types:

- **General-purpose instances:** provide a good balance of compute, memory, and networking resources, and can be used for a variety of diverse workloads like web service or code repositories.
- **Compute-optimized instances:** are ideal for compute-intensive tasks like gaming servers, high-performance computing or HPC, and even scientific modelling.
- **Memory-optimized instances:** are good for memory-intensive tasks. Accelerated computing are good for floating point number calculations, database, graphics processing, or data pattern matching, as they use hardware accelerators.
- **Storage optimized:** are good for workloads that require high performance for locally stored data.

#### Pricing:

- **On-Demand Instances:** are ideal for short-term, irregular workloads that cannot be interrupted. No upfront costs or minimum contracts apply. The instances run continuously until you stop them, and you pay for only the computer time you use.
- **Amazon EC2 Savings Plans:** are ideal for workloads that involve a consistent amount of compute usage over a 1-year or 3-year term.
- **Reserved Instances:** are a billing discount applied to the use of On-Demand Instances in your account. You can purchase Standard Reserved and Convertible Reserved Instances for a 1-year or 3-year term, and Scheduled Reserved Instances for a 1-year term. You realize greater cost savings with the 3-year option. Payments: All Upfront, Partial Upfront, and No Upfront
- **Spot Instances:** are ideal for workloads with flexible start and end times, or that can withstand interruptions. Spot Instances use unused Amazon EC2 computing capacity and offer you cost savings at up to 90% off of On-Demand prices.
- **Dedicated Hosts:** are physical servers with Amazon EC2 instance capacity that is fully dedicated to your use.



## Amazon EC2 Auto Scaling

Architecture to automatically respond to changing demand by scaling out or in (using also CloudWatch).

### Types:

- Dynamic scaling responds to changing demand.
- Predictive scaling automatically schedules the right number of Amazon EC2 instances based on predicted demand.

## AMI

Amazon Machine Image

## Elastic Load Balancing

is the AWS service that automatically distributes incoming application traffic across multiple resources, such as Amazon EC2 instances.

## Messaging and Queuing

### Amazon SQS (Simple Queue Service)

Only queue “manager”. Send, store, and receive messages between software components at any volume.

### Amazon SNS (Simple Notification Service)

is a publish/subscribe service. Using Amazon SNS topics, a publisher publishes messages to subscribers. is used for building and integrating loosely-coupled, distributed applications

## Serverless computing

### AWS Lambda

is a service that lets you run code without needing to provision or manage servers.

### Containers

### Amazon ECS (Amazon Elastic Container Service)

is a highly scalable, high-performance container management system that enables you to run and scale containerized applications on AWS. Store docker images in EC2 Container Registry. Supports API to start and stop containers





## Amazon EKS (Amazon Elastic Kubernetes Service)

### AWS Fargate

is a serverless compute engine for containers. It works with both Amazon ECS and Amazon EKS. AWS Fargate manages your server infrastructure for you

### SWF (Simple Workflow Service)

it easy to build applications that coordinate work across distributed components

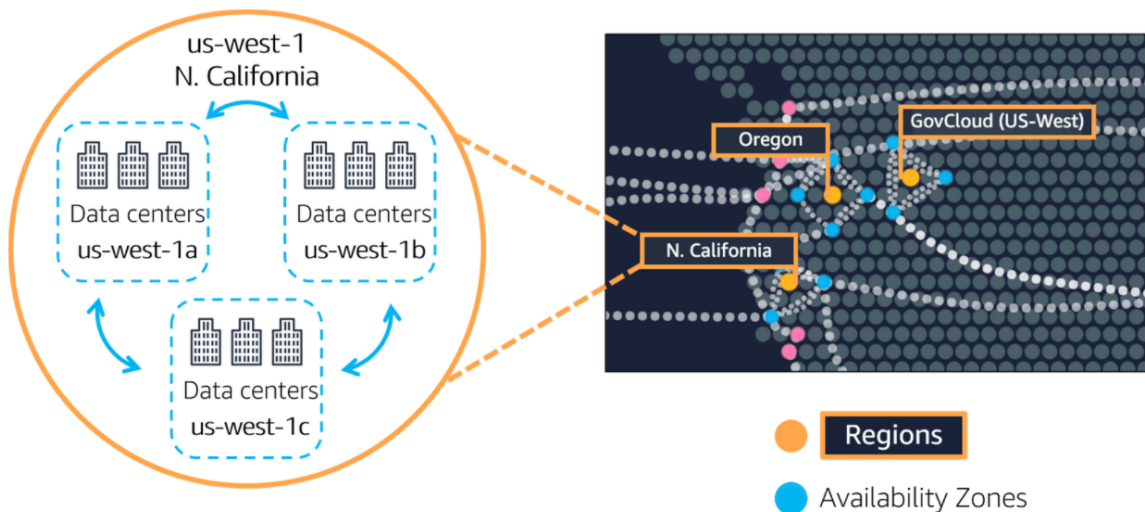
### STS (Security Token Service)

is a web service that enables you to request temporary, limited-privilege credentials for AWS Identity and Access Management

### Amazon Lightsail

a service that enables you to run virtual private servers, managed MySQL databases, HA storage, and load balancing

## AWS global infrastructure



## AWS Regions

Region is isolated from every other Region in the sense that absolutely no data goes in or out of your environment in that Region without you explicitly granting permission for that data to be moved. It contains two or more AZ



## Availability Zone

An Availability Zone is a single data center or a group of data centers within a Region.

## Edge locations

An edge location is a site that Amazon CloudFront uses to store cached copies of your content closer to your customers for faster delivery.

## Amazon CloudFront

Use edge locations to provide a global content delivery service. Works seamlessly with any AWS origin, such as Amazon S3, Amazon EC2, Elastic Load Balancing, or with any custom HTTP origin

## AWS Elastic Beanstalk

With AWS Elastic Beanstalk, you provide code and configuration settings, and Elastic Beanstalk deploys the resources necessary to perform the following tasks: (per “sviluppatore”)

- Adjust capacity
- Load balancing
- Automatic scaling
- Application health monitoring

## AWS CloudFormation

With AWS CloudFormation, you can treat your infrastructure as code. It's simply a way to define all the resources needed for deployment in a huge JSON file. (per “sistemisti”)

## AWS CloudFormation Change Sets

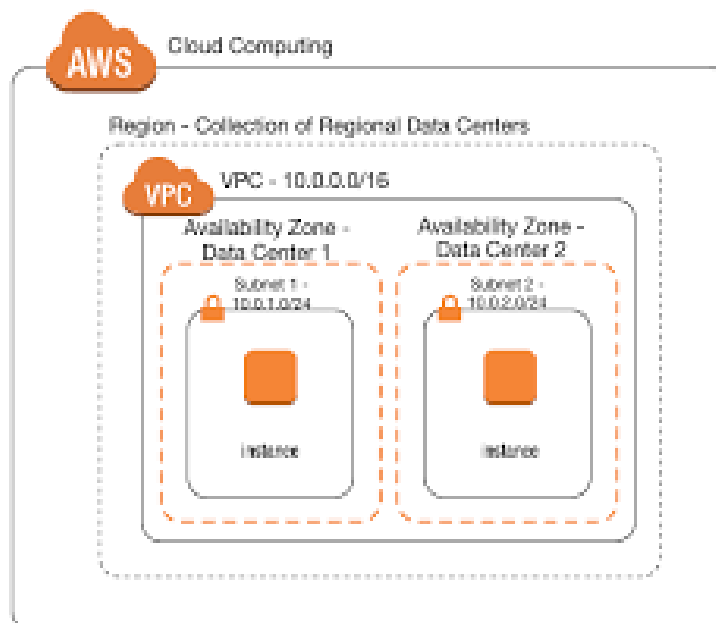
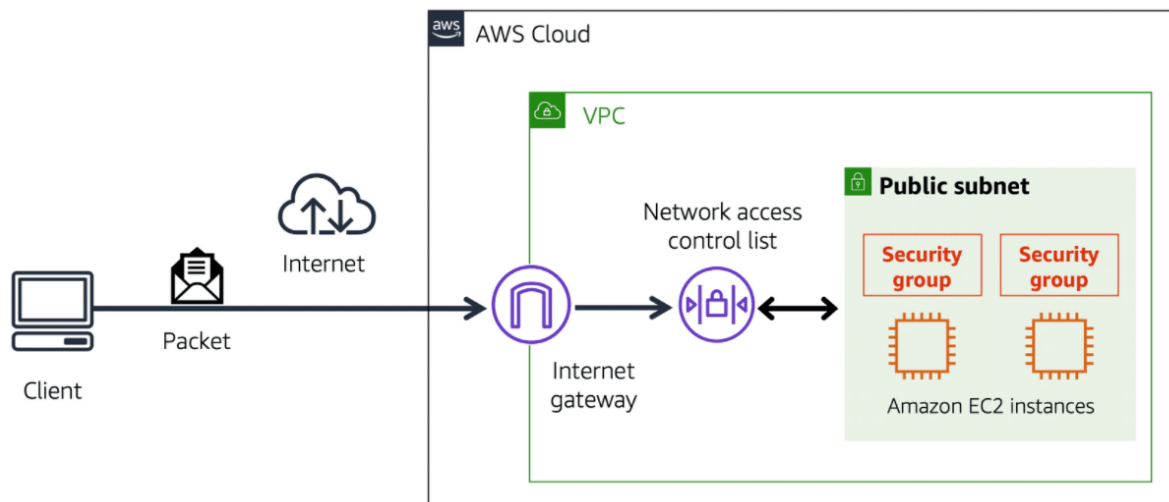
can be used preview changes to be made to an AWS resource

## AWS Outposts

Extend AWS infrastructure and services to your on-premises data center



# Networking



## Amazon VPC

Amazon VPC enables you to provision an isolated section of the AWS Cloud. In this isolated section, you can launch resources in a virtual network that you define. VPC is inside a region and span subnets in multiple AZ. The default VPC assign public and private IP to instances

## VPC Wizard

- VPC with a Single Public Subnet
- VPC with Public and Private Subnets
- VPC with Public and Private Subnets and Hardware VPN Access
- VPC with a Private Subnet Only and Hardware VPN Access



## Subnets

A subnet is a section of a VPC that can contain resources such as Amazon EC2 instances. One AZ per subnet

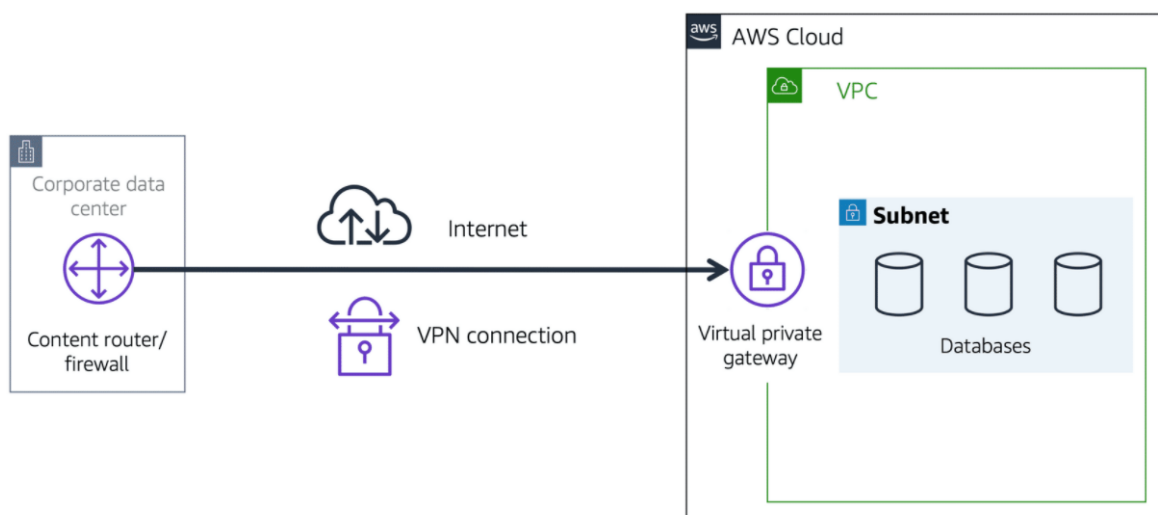
## Internet gateway

To allow public traffic from the internet to access your VPC, you attach an internet gateway to the VPC.

## Bastion Host

Host placed in public subnet that is used as a “tunnel” to reach private subnet from the internet

## Virtual private gateway

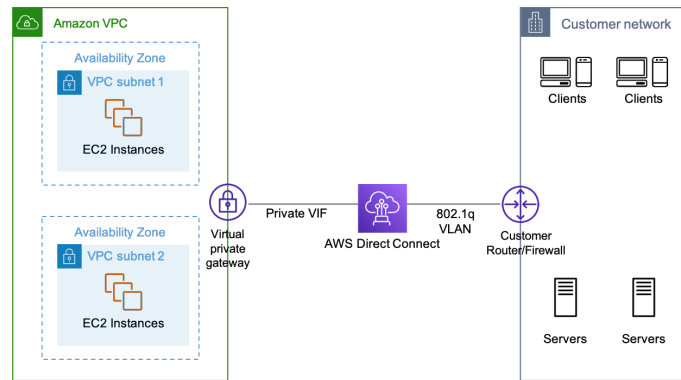


To access private resources in a VPC, you can use a virtual private gateway. A virtual private gateway allows traffic into the VPC only if it is coming from an approved network using a VPN. It uses an internet connection.

## AWS Direct Connect

is a service that enables you to establish a dedicated private connection between your data center and a VPC. You can access all resources within the local region over a private virtual interface (VIF). You can also connect to the public services in other regions using a public VIF and IPsec





## NAT Gateways

allow instances in a private subnet to access the Internet (non viceversa). Are elastically scalable, managed by AWS, and provide automatic HA.

You cannot assign a NAT Gateway to a security group, use them as bastion hosts, or configure port forwarding. Charged depending on the number of NAT gateways you use, duration of usage, and amount of data that you send through the NAT gateways.

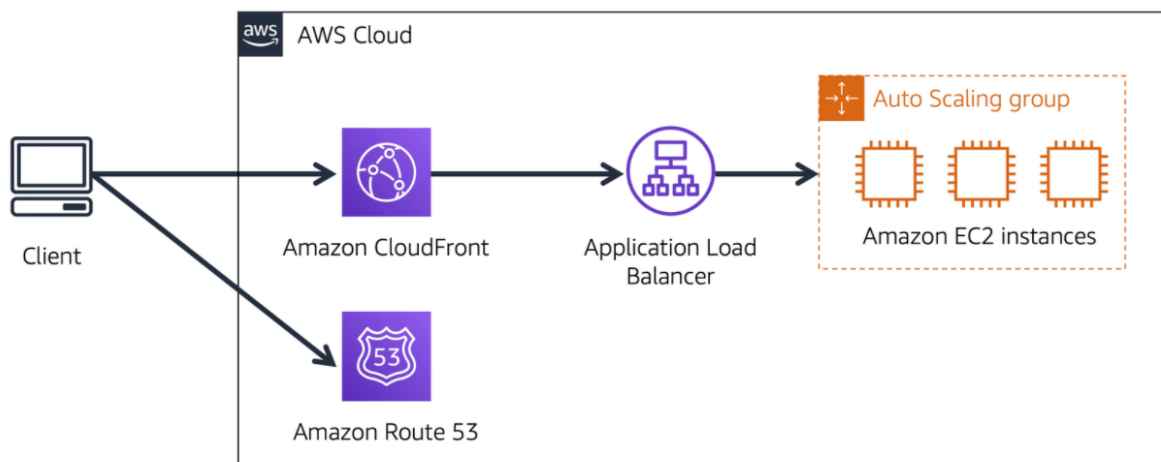
## Network ACL

Subnet level network access list. Is stateless. By default, your account's default network ACL allows all inbound and outbound traffic, but you can modify it by adding your own rules.

## Security Groups

Instance level. Is stateful ("has memory"). Can remember which packets are passed before. By default, a security group denies all inbound traffic and allows all outbound traffic. Can be edited while the instance is running

## Route 53



Route 53 is a DNS service that can direct traffic to different endpoints using several different routing policies include Simple, Weighted, Latency based, Failover, Geo-location, Geo-Proximity, Multi-Value and Traffic Flow

- Geoproximity: route in using a preset preference rule (from a closest location)
- Geolocation: serve content depending on browser geolocation
- multi-value: used for quality of service
- failover: used to automatically switch to healthy DNS

## Amazon Route 53

health checks monitor the health and performance of your web applications, web servers, and other resources

# Storage and Databases

## Amazon EBS (Amazon Elastic Block Store)

is a service that provides block-level storage volumes that you can use with Amazon EC2 instances. Works in a single AZ. Root volumes are deleted by default. Multiple EBS per EC2

Types:

- GP2 (SSD): support bursting, start with 3000IOPs for 30 min
- io1 (SSD): designed for instances with I/O-intensive workload
- st1 (HDD): low cost, cannot boot EC2
- sc1 (Cold HDD): lowest cost

## Amazon EBS snapshots

An EBS snapshot is an incremental backup

## Instance stores

An instance store provides temporary block-level storage for an Amazon EC2 instance. When the instance is terminated, you lose any data in the instance store.

## Amazon S3 (Amazon Simple Storage Service)

Amazon S3 offers unlimited object storage space. The maximum file size for an object in Amazon S3 is 5 TB. Supports versioning and lifecycle policies: are policies you can create that can move data automatically between tiers. Names are unique globally and are region-specific storage. Supports MFA to prevent deletion

## Amazon S3 storage classes

- **Standard:** Designed for frequently accessed data, Stores data in a minimum of three Availability Zones. SLA 99.99% availability, 99.999999999% durability



- **S3 Standard-Infrequent Access (S3 Standard-IA):** Ideal for infrequently accessed data, with a lower storage price and a higher retrieval price than “standard”. High availability when needed. SLA 99.9%
- **S3 One Zone-Infrequent Access (S3 One Zone-IA):** Stores data in a single Availability Zone, Has a lower storage price than S3 Standard-IA. SLA 99,5%
- **S3 Intelligent-Tiering:** Ideal for data with unknown or changing access patterns. Monitors objects’ access patterns. Move objects automatically from standard to standard-IA.
- **S3 Glacier:** Low-cost storage designed for data archiving, Able to retrieve objects within a few minutes to hours. NO SLA
- **S3 Glacier Deep Archive:** Lowest-cost object storage class ideal for archiving, Able to retrieve objects within 12 hours. NO SLA

### Amazon S3 Transfer Acceleration

- enables fast, easy, and secure transfers of files over long distances between your client and your Amazon S3 bucket.

## Amazon EFS (Amazon Elastic File System)

File storage is ideal for use cases in which a large number of services and resources need to access the same data at the same time. As you add and remove files, Amazon EFS grows and shrinks automatically. Work in multiple AZ

## AWS Storage Gateway

enables hybrid storage between on-premises environments and the AWS Cloud.

- **File gateway** provides a virtual on-premises file server, which enables you to store and retrieve files as objects in Amazon S3
- **The volume gateway** represents the family of gateways that support block-based volumes, previously referred to as gateway-cached and gateway-stored modes
- **Tape:** can use standard third part backup software (Veeam)

## Amazon RDS (Amazon Relational Database Service)

Amazon RDS is a managed service that automates tasks such as hardware provisioning, database setup, patching, and backups.

Type:

- Amazon Aurora: It is compatible with MySQL and PostgreSQL relational databases. It replicates six copies of your data across three Availability Zones and continuously backs up your data to Amazon S3.
- PostgreSQL
- MySQL
- MariaDB



- Oracle Database
- Microsoft SQL Server

Supports:

- Multi-Master adds the ability to scale out write performance across multiple Availability Zones
- Multi-AZ RDS creates a replica in another AZ and synchronously replicates to it (DR only)
- Read replicas are used for read-heavy DBs and replication is asynchronous (only aurora, mysql, postgres), also in different regions/AZ

## Amazon DynamoDB

It has millisecond response time. It's fully managed, and it's highly scalable. Backups are managed by AWS. Supports:

- On-demand capacity mode
- Provisioned

Consistent types:

- Strongly consistent: DynamoDB returns a response with the most up-to-date data, reflecting the updates from all prior write operations that were successful
- Eventually consistent: the response might not reflect the results of a recently completed write operation

## Amazon Redshift

is a data warehousing service that you can use for big data analytics. It offers the ability to collect data from many sources and helps you to understand relationships and trends across your data. Petabyte

## AWS DMS (Database Migration Service)

enables you to migrate relational databases, nonrelational databases, and other types of data stores.

Migrate:

- on-premise → cloud
- cloud → on-premise
- EC2 → RDS
- Support redshift and dynamoDB

## AWS Schema Conversion Tool

Convert data structured for a database to another database (e.g from MySQL to mssql)





## Amazon DocumentDB

Great for content management, catalogs, user profiles.

## Amazon Neptune

a graph database, engineered for social networking and recommendation engines, also great for fraud detection needs.

## Amazon QLDB (Amazon Quantum Ledger Database)

is a ledger database service.

## Amazon Managed Blockchain

is a service that you can use to create and manage blockchain networks with open-source frameworks.

## Amazon ElastiCache

is a service that adds caching layers on top of your databases to help improve the read times of common requests.

Only:

- Memcached
- Redis

## Amazon DynamoDB Accelerator

is an in-memory cache for DynamoDB.

## Amazon Athena

is an interactive query service that makes it easy to analyze data in Amazon S3 using standard SQL



# Security

## The AWS shared responsibility model

CUSTOMERS	CUSTOMER DATA		
	PLATFORM, APPLICATIONS, IDENTITY AND ACCESS MANAGEMENT		
	OPERATING SYSTEMS, NETWORK AND FIREWALL CONFIGURATION		
	CLIENT-SIDE DATA ENCRYPTION	SERVER-SIDE ENCRYPTION	NETWORKING TRAFFIC PROTECTION

AWS	SOFTWARE			
	COMPUTE	STORAGE	DATABASE	NETWORKING
	HARDWARE/AWS GLOBAL INFRASTRUCTURE			
	REGIONS	AVAILABILITY ZONES	EDGE LOCATIONS	

## IAM (AWS Identity and Access Management)

enables you to manage access to AWS services and resources securely.

### IAM users

is an identity that you create in AWS. It represents the person or application that interacts with AWS services and resources. It consists of a name and credentials.

### IAM policies

is a document that allows or denies permissions to AWS services and resources.

### IAM groups

is a collection of IAM users. IAM policy to a group, all users in the group are granted permissions specified by the policy.

### IAM roles

is an identity that you can assume to gain temporary access to permissions.

## AWS Organizations

Used to consolidate and manage multiple AWS accounts within a central location.

### Organizational units

you can group accounts into organizational units (OUs) to make it easier to manage accounts with similar business or security requirements.



## SCPs (Service control policies)

SCPs enable you to place restrictions on the AWS services, resources, and individual API actions that users and roles in each account can access. Works with: an individual member account and an organizational unit (OU)

## AWS Artifact

is a service that provides on-demand access to AWS security and compliance reports and select online agreements.

### AWS Artifact Agreements

company needs to sign an agreement with AWS regarding your use of certain types of information throughout AWS services

### AWS Artifact Reports

provide compliance reports (e.s SOC2) from third-party auditors. These auditors have tested and verified that AWS is compliant with a variety of global, regional, and industry-specific security standards and regulations.

## AWS Acceptable Use Policy

This Acceptable Use Policy governs your use of the services offered by Amazon Web Services. Provides information regarding prohibited actions on the AWS infrastructure

## Customer Compliance Center

contains resources to help you learn more about AWS compliance.

## AWS Shield

is a service that protects applications against DDoS attacks

### AWS Shield Standard

automatically protects all AWS customers at no cost. It protects your AWS resources from the most common, frequently occurring types of DDoS attacks.

### AWS Shield Advanced

is a paid service that provides detailed attack diagnostics and the ability to detect and mitigate sophisticated DDoS attacks.

## AWS KMS (AWS Key Management Service)

create, manage, and use cryptographic keys.



## AWS WAF

is a web application firewall that lets you monitor network requests that come into your web applications. Works together with Amazon CloudFront and an Application Load Balancer. Firewall are also subscribable from the marketplace

## Amazon Inspector (Vulnerability level)

Amazon Inspector helps to improve the security and compliance of applications by running automated security assessments. It checks applications for security vulnerabilities and deviations from security best practices, such as open access to Amazon EC2 instances and installations of vulnerable software versions.

## Amazon GuardDuty (Network level)

It identifies threats by continuously monitoring the network activity and account behaviour within your AWS environment.

## Compliance

AWS helps customers to be compliant (PCI DSS, ...)  
[aws.amazon.com/compliance/resources](https://aws.amazon.com/compliance/resources)

## Penetration testing

Check which resources can be tested

# Monitoring and Analytics

## AWS CloudTrail (API level)

Actions taken by a user, role, or an AWS service are recorded

### CloudTrail Insights

automatically detect unusual API activities in your AWS account.

## Amazon CloudWatch (Metric level)

is a web service that enables you to monitor and manage various metrics and configure alarm actions based on data from those metrics.

### CloudWatch alarms

that automatically perform actions if the value of your metric has gone above or below a predefined threshold.



## AWS Trusted Advisor

is a web service that inspects your AWS environment and provides real-time recommendations in accordance with AWS best practices.

- **performance:** ensuring you to take advantage of provisioned throughput, and monitoring for overutilized Amazon EC2 instances.
- **cost optimization:** includes checks for unused or idle resources that could be eliminated and provides cost savings.
- **fault tolerance:** includes checks to help you improve your applications' availability and redundancy.
- **service limits:** checks for service usage that is more than 80% of the service limit (with also basic support plan).
- **security:** checks that help you to review your permissions and identify which AWS security features to enable (with also basic support plan).

## AWS pricing and support

### TCO

Total cost of ownership, used to project costs, estimated expenses and create reports (used to evaluate migration to the cloud)

### AWS pricing concepts

- Pay for what you use.
- Pay less when you reserve.
- Pay less with volume-based discounts when you use more.

### AWS Pricing Calculator

lets you explore AWS services and create an estimate for the cost of your use cases on AWS.

### Consolidated billing

enables you to receive a single bill for all AWS accounts in your organization. AWS accounts allow to centrally manage discounts

### AWS Budgets

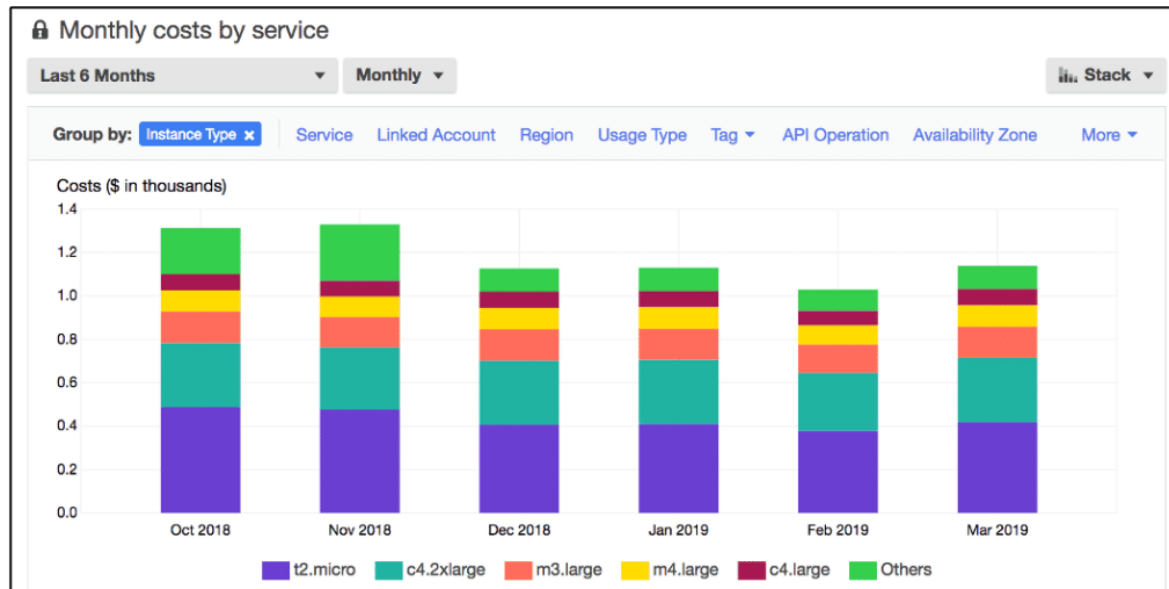
you can create budgets to plan your service usage, service costs, and instance reservations. Information updated three times a day. Allow adding alerts based on the expense budget



## AWS Cost Management tools

includes services, tools, and resources to organize and track cost and usage data, enhance control through consolidated billing and access permissions, enable better planning through budgeting and forecasts, and further lower costs with resources and pricing optimizations.

## AWS Cost Explorer



is a tool that enables you to visualize, understand, and manage your AWS costs and usage over time. AWS Cost Explorer includes a default report of the costs and usage for your top five cost-accruing AWS services. And support cost forecast

## AWS Support plans

- **Basic:** free. It includes access to whitepapers, documentation, and support communities. With Basic Support, you can also contact AWS for billing questions and service limit increases.
- **Developer:**
  - can email customer support directly with a 24 hour response time on any questions you have. And responses of less than 12 hours in case your systems are impaired. Cloud Support Associates team
  - Best practice guidance
  - Client-side diagnostic tools
  - Building-block architecture support, which consists of guidance for how to use AWS offerings, features, and services together
  - help you to identify opportunities for combining specific services and features.
- **Business:**
  - You are given direct phone access to our support team that has a four hour response SLA. If your production system is impaired, and a one hour SLA for production systems down.
  - Use-case guidance to identify AWS offerings, features, and services that can best support your specific needs



- All AWS Trusted Advisor checks
- Limited support for third-party software, such as common operating systems and application stack components
- **Enterprise**
  - Plus a 15 minute SLA for business critical workloads, a dedicated technical account manager for TAM (concierge support team that comes with Enterprise level support)
  - Application architecture guidance, which is a consultative relationship to support your company's specific use cases and applications
  - Infrastructure event management: A short-term engagement with AWS Support that helps your company gain a better understanding of your use cases. This also provides your company with architectural and scaling guidance.
  - A Technical Account Manager

## AWS Marketplace

is a digital catalog that includes thousands of software listings from independent software vendors. You can use AWS Marketplace to find, test, and buy software that runs on AWS.

## Golden Image

A golden image is a snapshot of a particular state for that resource. Examples are EC2 instances, RDS instances and EBS volumes

## Migration and innovation

### AWS CAF (AWS Cloud Adoption Framework)

organizes guidance into six areas of focus, called Perspectives. This helps customer to migrate the on-premise infrastructure into the cloud

- **Business Perspective:** ensures that IT aligns with business needs and that IT investments link to key business results. helps you to move from a model that separates business and IT strategies into a business model that integrates IT strategy.
- **People Perspective** helps prepare their teams for cloud adoption by updating staff skills and organizational processes to include cloud-based competencies.
- **Governance Perspective** helps you to identify and implement best practices for IT governance and support business processes with technology.
- **Platform Perspective:** helps you design, implement, and optimize the architecture of AWS technology based on business goals and objectives. It helps provide strategic guidance for the design, principles, tools, and policies you will use to define AWS infrastructure..
- **Operations Perspective** helps you to run, use, operate, and recover IT workloads to levels that meet the requirements of your business stakeholders.



- **Security Perspective** ensures that the organization meets security objectives for visibility, auditability, control, and agility.

## Migration strategies

- **Rehosting:** “lift-and-shift” involves moving applications without changes.
- **Replatforming:** “lift, tinker, and shift,” involves making a few cloud optimizations to realize a tangible benefit.
- **Refactoring/re-architecting:** involves reimagining how an application is architected and developed by using cloud-native features.
- **Repurchasing:** moving from a traditional license to a software-as-a-service model.
- **Retaining:** consists of keeping applications that are critical for the business in the source environment.
- **Retiring:** removing applications that are no longer needed.

## AWS Snow Family

### AWS Snowcone

2 CPUs, 4 GB of memory, and 8 TB of usable storage.

### AWS Snowball

- Snowball Edge Storage Optimized
  - Storage: 80 TB of hard disk drive (HDD) capacity for block volumes and Amazon S3 compatible object storage, and 1 TB of SATA solid state drive (SSD) for block volumes.
  - Compute: 40 vCPUs, and 80 GiB of memory to support Amazon EC2 sbe1 instances (equivalent to C5).
- Snowball Edge Compute Optimized
  - Storage: 42-TB usable HDD capacity for Amazon S3 compatible object storage or Amazon EBS compatible block volumes and 7.68 TB of usable NVMe SSD capacity for Amazon EBS compatible block volumes.
  - Compute 52 vCPUs, 208 GiB of memory, and an optional NVIDIA Tesla V100 GPU. Devices run Amazon EC2 sbe-c and sbe-g instances, which are equivalent to C5, M5a, G3, and P3 instances.

### AWS Snowmobile

100 petabytes

## Serverless applications

refers to applications that don’t require you to provision, maintain, or administer servers.





## Artificial intelligence

- **Amazon Transcribe:** Convert speech to text
- **Amazon Comprehend:** Discover patterns in text
- **Amazon Fraud:** Detect or identify potentially fraudulent online activities
- **Amazon Lex:** Build voice and text chatbots
- **Amazon Augmented AI (Amazon A2I):** provides built-in human review workflows for common machine learning use cases, such as content moderation and text extraction from documents

## Amazon SageMaker

Machine learning

## AWS DeepRacer

is an autonomous 1/18 scale race car that you can use to test reinforcement learning models.

## AWS Well-Architected Framework

helps you understand how to design and operate reliable, secure, efficient, and cost-effective systems in the AWS Cloud. It provides a way for you to consistently measure your architecture against best practices and design principles and identify areas for improvement.

- **Operational excellence** is the ability to run and monitor systems to deliver business value and to continually improve supporting processes and procedures. Ability to run workloads effectively and gain insights into their operations
- **Performance efficiency** is the ability to use computing resources efficiently to meet system requirements and to maintain that efficiency as demand changes and technologies evolve.
- **Cost optimization** is the ability to run systems to deliver business value at the lowest price point.
- **Reliability:** consistently and correctly perform its intended functions. The ability of:
  - Test recovery procedures
  - Automatically recover from failure
  - Scale horizontally to increase aggregate system availability
  - Stop guessing capacity
  - Manage change in automation
- **Security** is the ability to protect information, systems, and assets while delivering business value through risk assessments and mitigation strategies.

## Advantages of cloud computing

- Trade upfront expense for variable expense.
- Benefit from massive economies of scale.



- Stop guessing capacity.
- Increase speed and agility.
- Stop spending money running and maintaining data centers.
- Go global in minutes.

## Scalability and Elasticity

- **Scalability:** A scalable service will automatically grow in capacity to seamlessly meet any changes in demand. What workload can handle efficiently? A well-designed cloud-based operation will constantly monitor the health of its application stack and respond whenever preset performance metrics might soon go unmet. The ability of an application to automatically add pre-configured compute resources to meet increasing demand
- **Elasticity:** The ability of an application to increase or decrease computing resources to match changing demand

## More services

### Amazon DLM (Amazon Data Lifecycle Manager)

you can manage the lifecycle of your AWS resources. You create lifecycle policies, which are used to automate operations on the specified resources.

### Amazon Elastic Map Reduce (EMR):

provides a managed Hadoop framework that makes it easy, fast, and cost-effective to process vast amounts of data across dynamically scalable Amazon EC2 instance

### Amazon OpsWorks

lets you use Chef and Puppet to automate how servers are configured, deployed, and managed across your Amazon EC2 instances or on-premises compute environments

### Amazon Kinesis

makes it easy to collect, process, and analyze real-time, streaming data so you can get timely insights and react quickly to new information

There are four types of Kinesis service:

- **Kinesis Video Streams** makes it easy to securely stream video from connected devices to AWS for analytics, machine learning (ML), and other processing
- **Kinesis Data Streams** enables you to build custom applications that process or analyze streaming data for specialized needs
- **Kinesis Data Firehose** is the easiest way to load streaming data into data stores and analytics tools



- **Kinesis Data Analytics** is the easiest way to process and analyze real-time, streaming data

## AWS Glue

is a serverless data integration service that makes it easy to discover, prepare, and combine data for analytics, machine learning, and application development.

## AWS Personal Health Dashboard

provides alerts and remediation guidance when AWS is experiencing events that may impact you

## Amazon Augmented AI (Amazon A2I)

provides built-in human review workflows for common machine learning use cases, such as content moderation and text extraction from documents.

## Amazon QuickSight

is a fast, cloud-powered business intelligence service that makes it easy to deliver insights to everyone in your organization.

## AWS Batch

enables developers, scientists, and engineers to easily and efficiently run hundreds of thousands of batch computing jobs on AWS.

## AWS Macie

is a fully managed data security and data privacy service that uses machine learning and pattern matching to discover and protect your sensitive data in AWS

## AWS X-Ray

helps developers analyze and debug production, distributed applications, such as those built using a microservices architecture. With X-Ray, you can understand how your application and its underlying services are performing to identify and troubleshoot the root cause of performance issues and errors.

## AWS SES

Simple Email Service



## AWS Config

Can be used to audit, evaluate configuration and You can review changes in configurations and relationships between AWS resources.

## AWS CodeStar

user interface that support software development activities in one place (development, build, deployment)

## AWS CodeGuru

Use machine learning to improve code quality

## AWS CodeBuild

CI service that produce code packages to be deployed

## AWS CodeArtifact

repository to store software packages

## AWS Data Sync

is a simple and fast way to move huge amounts of data (hundreds of terabytes) between on-prem storage to S3, EFS, FSx.

## AWS Data Pipeline

is a web service that facilitates data processing and movement between various AWS services (like compute and storage). Data pipeline also works well with data sources that are on-premise. In the given data migration scenario, data sync is a more apt choice.

## AWS Migration Hub

is a service that facilitates discovery of the existing applications and IT assets and provides a view to better plan and track application migrations.

